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Bambino: a segmented silicon detector system for TIGRESS

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Bambino is a charge-particle detector system with sufficient energy and position resolutions for the differentiation between projectile-like and target-like particles and for the needed Doppler-shift corrections to the detected γ rays in TIGRESS. It consists of two annular silicon detectors having an active inner diameter of 22 mm and outer diameter of 70 mm and a thickness about 150 μm. They are placed 3.0 cm from the target and provide solid-angle coverage of 1.15π sr. Each has 24 sectors in θ for the angle coverage between 20.1^{o} and 49.4^{o} and between 130.6^{o} to 159.9^{o} and has 16 sectors in ϕ for 2π coverage. Three of those detectors and the matching preamplifiers, cables etc were ordered and received in 2005 at a cost about $50k funded by DOE/OS. The system was undergoing various tests at both LLNL and TRIUMF in the second quarter of 2006 and was successfully integrated into TIGRESS for the commission run in July/August 2006.

A side-accessible spherical target chamber, used in the commission run, was designed and built in Rochester in the second quarter of 2006 to accommodate this detector system at a cost about $28k funded by NSF and AFOSR.

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